

PATENT  
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## IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: RALUY, Francis et al Conf.:  
Appl. No.: NEW Group:  
Filed: June 30, 2004 Examiner:  
For: SHOE WITH AUTOMATIC CLOSURE

L E T T E R

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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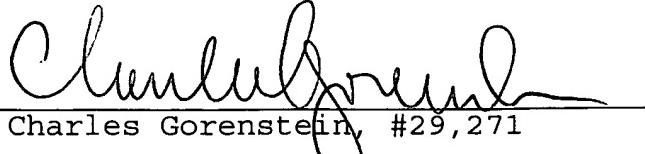
Sir:

The PTO is requested to use the amended sheets/claims attached hereto (which correspond to Article 19 amendments or to claims attached to the International Preliminary Examination Report (Article 34)) during prosecution of the above-identified national phase PCT application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment(s)

(Rev. 02/12/2004)

CLAIMS

1. Shoe with automatic closure, the shoe being of the type comprising a sole (1) with a toe piece (2) to which is attached at least one front attachment element (4) meant to hold a front part of the foot, and a heel piece (3) to which is connected at least one rear attachment element (5) to hold part of the heel of the foot, characterised in that this rear attachment element (5) is joined to, or is part of, at least one mobile support (6) that can move from an open position in which the rear attachment element (5) is separated from the aforementioned part of the heel of the foot, and a closed position in which the rear attachment element (5) is holding the heel of the foot, the mobile support (6) being related to a mechanism housed in the heel piece (3) that can be actuated by the pressure of the heel of the foot of a user on the heel piece (3) to move the mobile support (6) from the aforementioned open position to the aforementioned closed position, where it is kept by the first reversible retaining-releasing means (10, 26, 50, 70, 90, 100, 110, 120, 130, 140, 150, 160) and can also be actuated by the other foot of the user acting on a member (24, 36, 51, 71, 91, 101, 111, 121, 131, 141, 151, 152) of the mechanism for moving said mobile support (6) from the closed to the open position, where it is maintained by second elastic retaining-releasing means (7, 25, 52, 72, 92, 102, 112, 122, 132, 142, 152, 162).
2. Shoe according to claim 1, characterised in that said heel piece (3) is comprised of an upper element (8) and a lower element (9) connected to each other and capable of relative motion in cooperation with said mechanism, the mechanism being configured such that the upper and lower elements (8, 9) are separated from each other in the open position of the mobile support (6) and near each other in

the closed position.

3. Shoe according to claim 2 characterised in that said second retaining means comprise elastic means (7) that act 5 on the mechanism to push said mobile support (6) towards the open position and said first retaining means (10) retain the mobile support (6) in the closed position against the action of said elastic means (7), the mobile support (6) being connected to the upper element (8) 10 and/or the lower element (9) so that as the upper element (8) is pressed by the heel of the user's foot to bring it near the lower element, the aforementioned mobile support (6) moves towards said closed position against the action of the elastic means (7) until it is automatically 15 retained in the closed position by said first releasing-retaining means (10).

4. Shoe according to claim 3 characterised in that the upper and lower elements (8, 9) are hinged to each other 20 by a hinge ping (15).

5. Shoe according to claim 4 characterised in that the mobile support (6) is fixedly connected to a shaft (11) mounted on the lower element (9) so that it can turn at 25 least a certain angle between the open and close positions, a lever (13) being fixedly joined to the shaft (11) that has a distal end (14) that slides or rolls on the upper element (8).

30 6. Shoe according to claim 5 characterised in that the aforementioned elastic means (7) act on the lever (13) to push the mobile support (6) to the open position and to separate the upper and lower elements (8, 9).

35 7. Shoe according to claim 6 characterised in that said

elastic means (7) comprise a helical or a compression spring.

8. Shoe according to claim 5 characterised in that the  
5 upper element (8) includes guide means (16) for the distal end (14) of the lever (13), these guide means restricting the sideways relative motion between the distal end (14) and the upper element (8) and allowing a translation movement of the distal end (14) with respect to the upper  
10 element (8).

9. Shoe according to claim 8 characterised in that the aforementioned guide means comprise at least one pair of grooves (16) attached to the upper element (8) or being  
15 part of it, in which are slidably inserted corresponding lugs (17) that extend laterally from the distal end (14) of the lever (13).

10. Shoe according to claim 8 characterised in that the  
20 distal end (14) is rounded and slides on a contact track (18) of a strong material with a low coefficient of friction with respect to the material of the distal end (14) of the lever (13).

25 11. Shoe according to claim 3 characterised in that said first retaining-releasing means (10) comprise a trigger (19) with a tab (20), this trigger (19) being mounted on the upper element (8) or lower element (9) so that it is free to turn about a pin (12) and is pushed by a spring  
30 (31) towards a retaining position where said tab (20) engages an anchoring (21) provided in the opposite lower element (9) and upper element (8) when the mobile support (6) is in the closed position.

35 12. Shoe according to claim 10 characterised in that the

trigger (19) includes a surface (22) that can come in contact with a surface (23) of the anchoring (21), these surfaces (22, 23) being configured and arranged so that the trigger (19) is displaced by the surface (23) against the action of the spring (31), while the upper element (8) and the lower element (9) approach each other to allow the anchoring (21) to pass in front of the aforementioned tab (20), and the trigger (19) is released when the mobile support (6) reaches the closed position to allow coupling 10 the tab (20) in the anchoring (21).

13. Shoe according to claim 11 characterised in that the trigger (19) comprises a protrusion (24) that can be accessed from the outside and that can be actuated by the user when the mobile support (6) is in the closed position to move the trigger (19) against the action of said spring (31) in order to release the coupling of the tab (20) in the anchoring (21) and allow the mobile support (6) to move to the open position by the elastic means (7).  
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14. Shoe according to claim 12 characterised in that the anchoring (21) mounted on the upper element (8) or the lower element (9) has inclined side ends (47) that in the closed position are inserted in the inclined walls (37) of a cavity that exists in the opposite lower element (9) or upper element (8) where the trigger (19) is housed.  
25

15. Shoe according to claim 2 characterised in that the first retaining means comprise elastic means (25) that act on the mechanism to push the mobile support (6) to the closed position and said second retaining means (26) retain the mobile support (6) in the open position against the action of the elastic means (25), the second retaining means (26) being configured and arranged in relation to 30 the upper and lower elements (8, 9) so that when the upper  
35

element (8) is pressed on by the heel of the user's foot to bring it near the lower element (9), the aforementioned second retaining means (26) are released and with them the aforementioned mobile support (6) moves to said closed  
5 position by the action of the elastic means (25).

16. Shoe according to claim 14 characterised in that the mobile support (6) can be displaced by the user from the closed position to the open one against the action of the  
10 elastic means (25), during which displacement the upper and lower elements (8, 9) are separated or allowed to separate until the second retaining means (26) are automatically placed in a retaining position for the mobile support (6) in the open position.

15 17. Shoe according to any of claims 2 to 15 characterised in that a waterproof gasket (27) is disposed around the perimeter of the upper element (8) or the lower element (9) such that it provides a protective seal for the  
20 mechanism when the upper and lower elements (8, 9) are near each other in the closed position and provides sufficient elasticity to allow the trigger (19) to open and close.

25 18. Shoe according to any of claims 2 to 4 characterised in that the lower element (9) is joined to the aforementioned toe piece (3) of the sole (1) and the upper element (8) moves upward with respect to it.

30 19. Shoe according to any of claims 2 to 4 characterised in that the upper element (8) is joined to said toe piece (2) of the sole (1) and the lower element (9) moves downward with respect to it.

35 20. Shoe according to claim 4 characterised in that the

mobile support (6) is connected to the lower element (9) by linear displacement guides and a lever (38) is hinged on an end (39) to the upper element (8), and mounted on the opposite end is at least one gear wheel (40) that  
5 engages on diametrically opposite areas the two racks (41, 42) respectively attached to the mobile support (6) and the lower element (9).

21. Shoe with automatic closure, according to claim 2,  
10 characterised in that the retaining-releasing means (50) are disposed on the front part of a mobile base (65) that runs inside a space (58) made in the heel piece (3) of the sole (1).

15 22. Shoe with automatic closure, according to claim 21, characterised in that said space (58) has guiding means (59) for said mobile base (65) and attachment means (60) on which are attached the retaining means (52) in an open position meant to open the mobile support (6).

20 23. Shoe with automatic closure, according to claim 21, characterised in that the retaining-releasing means (51) have a lug (52) so that when the aforementioned means are actuated turning about the hinge (63) the lug (52) moves forward displacing the mobile base (65) against elastic means (57) thereby reversing the effect of the retaining-releasing means (50) when displacing them towards the front part.

25 24. Shoe with automatic closure, according to claim 23, characterised in that the mobile base (65) is provided on its rear with a protrusion (61) on which acts the lug (62) of the release actuation part (51).

30 25. Shoe with automatic closure, according to claim 21,

characterised in that on the rear attachment part to which the mobile support (6) is joined this part is provided at its front with a recess (66) in which are housed the retaining-releasing means (50).

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26. Shoe with automatic closure, according to claim 21, characterised in that the retaining means in the open position (52) consist of elastic means disposed between the attachment elements (60) of the mobile base (65) and 10 another lug of the mobile support (6), acting in cooperation with the release actuation part (51), such that the latter must remain pressed on until the retaining-releasing means (50) are released.
- 15 27. Shoe with automatic closure, according to claim 21, characterised in that the retaining-releasing means (50) are disposed on the front end of the mobile base (65) having an emerging lug (53) that on its upper end has a protrusion (55) with bevelled edges that can be housed in 20 the mobile support (6) that have an inclined lower end (54) that is firmly joined to the rear attachment element (5); defined in these retaining-releasing means (50) is an incut (56) on which acts one of the ends of the elastic means (57).

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28. Shoe with automatic closure, according to claim 2, characterised in that the hinge between the upper element (8) and the lower element (9) is established by a front hinge (75), while the hinge between the upper part (8) and 30 the mobile support (6) that is connected to the rear attachment element (5) is established by a central shaft (74); in addition, said mobile support (6) is hinged to the lower element (9) by the rear shaft (73), this rear shaft (73) also hinging the retaining-releasing element 35 (70) to the lower element (9).

29. Shoe with automatic closure, according to claim 2, characterised in that the retaining-releasing means (70) for keeping the rear attachment element (5) in a closed position are provided with an actuation tab (71) that by pressing against the action of a spring (79) and revolving about the rear shaft (73) moves the tab (78) and releases the rear part (77) of the upper element (8), raising it by elastic means.
- 10 30. Shoe with automatic closure, according to claim 2, characterised in that the releasable retaining means for the open position consist of an elastic element (76) disposed on the front pivoting shaft (75) between the upper element (8) and the lower element (9).
- 15 31. Shoe with automatic closure, according to claim 2, characterised in that the releasable retaining means for the open position consist of an elastic means (72) disposed vertically between the lower piece (9) and the upper piece (8).
- 20 32. Shoe with automatic closure, according to claim 2, characterised in that the releasable retaining means for the open position consist of an elastic means (80) which when compressed acts pushing back the central shaft (74).
- 25 33. Shoe with automatic closure, according to claim 2, characterised in that regardless of the shape of the releasable retaining means for the open position used, the central shaft (74) runs through an oblong orifice (81) through which slides said shaft (74) by the action of the releasable elastic retaining means for the open position.
- 30 34. Shoe with automatic closure, according to claim 33,

- characterised in that alternatively to the upper part (8) having an oblong orifice (81) through which the central shaft runs, it is provided on its sides with corresponding lugs (82) that are housed in elongated or oblong orifices 5 (85) made in the mobile support (6) such that they allow a hinged union of the mobile support (6) and the upper element (8), the lateral lugs (81) of the upper element (8) sliding in said oblong orifice (83).
- 10 35. Shoe with automatic closure, according to claim 2, characterised in that the rear attachment element (5) is provided with an orifice on each of its sides in which is hinged a hinged part (84) of the front part (4), this front hinged part (84) being joined to the rear attachment 15 element (5) by a hinge (86); in addition, the hinged part (84) is also provided with a degree of freedom in its union to the front part (4) through the hinge area (85).
- 20 36. Shoe with automatic closure, according to claim 35, characterised in that the hinged part (84) as shown can be configured in the form of a belt that runs from side to side under guides, and is retained in the hinges (86) so that when the assembly is closed when the hinge (86) moves down it pulls on the belt pressing on the upper and 25 improving its hold.
- 30 37. Shoe with automatic closure, according to claim 35, characterised in that the rear attachment element (5) is provided with hinging means (86) to the front part (4) so that the two parts are directly hinged without needing additional elements.
- 35 38. Shoe with automatic closure, according to claim 1, characterised in that the retaining-releasing means (90) are placed on the rear end of the upper element (8)